SMP/E Intermediate Topics for Beginning and Experienced Sysprogs

Session 22297

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Abstract

Do you have to upgrade your system to support new hardware or software features? Do you have to create usermods or update existing usermods to support new maintenance? Do you need a strategy for backing up your SMP/E environment?

If you answered 'YES' to any of these questions, then this session is for you! The instructor has decades of experience working with SMP/E and will explain the following topics and more:

- Using FIXCATs to ensure all requisite maintenance applied for new hardware or software feature
- How to construct usermods from scratch or update existing usermods for new maintenance
- Using a backup strategy for your SMP/E environment that will allow you to recover even after ACCEPT to a previous maintenance level and more!

SMP/E Version 3 Publications Family

- Knowledge Center
https://www.ibm.com/support/knowledgecenter/en/SSLTBW_2.3.0/com.ibm.zos.v2r3.gim/gim.htm
- SA23-2275-30 – SMP/E for z/OS Commands
- GA32-0883-30 – SMP/E for z/OS Messages, Codes, and Diagnosis
- SA23-2276-30 – SMP/E for z/OS Reference
- SA23-2277-30 – SMP/E for z/OS User's Guide (a primer)

- Useful: Software Delivery, Standard Packaging Rules for z/OS-Based Products, SC23-3695-10: https://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss?CTY=US&FNC=SRX&PBL=SC23-3695-10

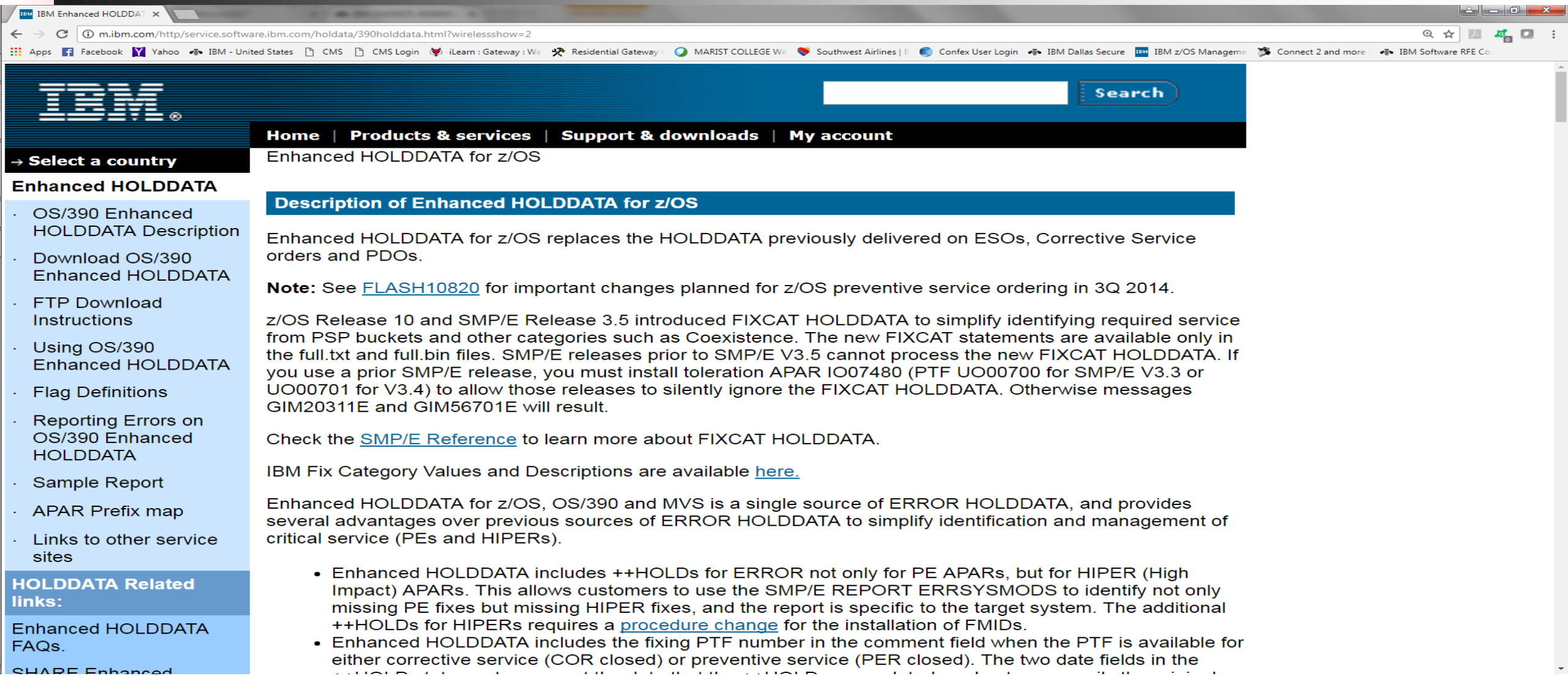
Agenda

- Enhanced HOLDDATA
- REPORT ERRSYSMODS
- FIXCATs - Best Enhancement EVER!
- FIXCAT Explorer
- REPORT MISSINGFIX
- Problem - Mischaracterized HOLDDATA
- Problem - Incorrect Packaging MODID Errors
- USERMODs
- Backing Up Your SMP/E Environment
- Finally

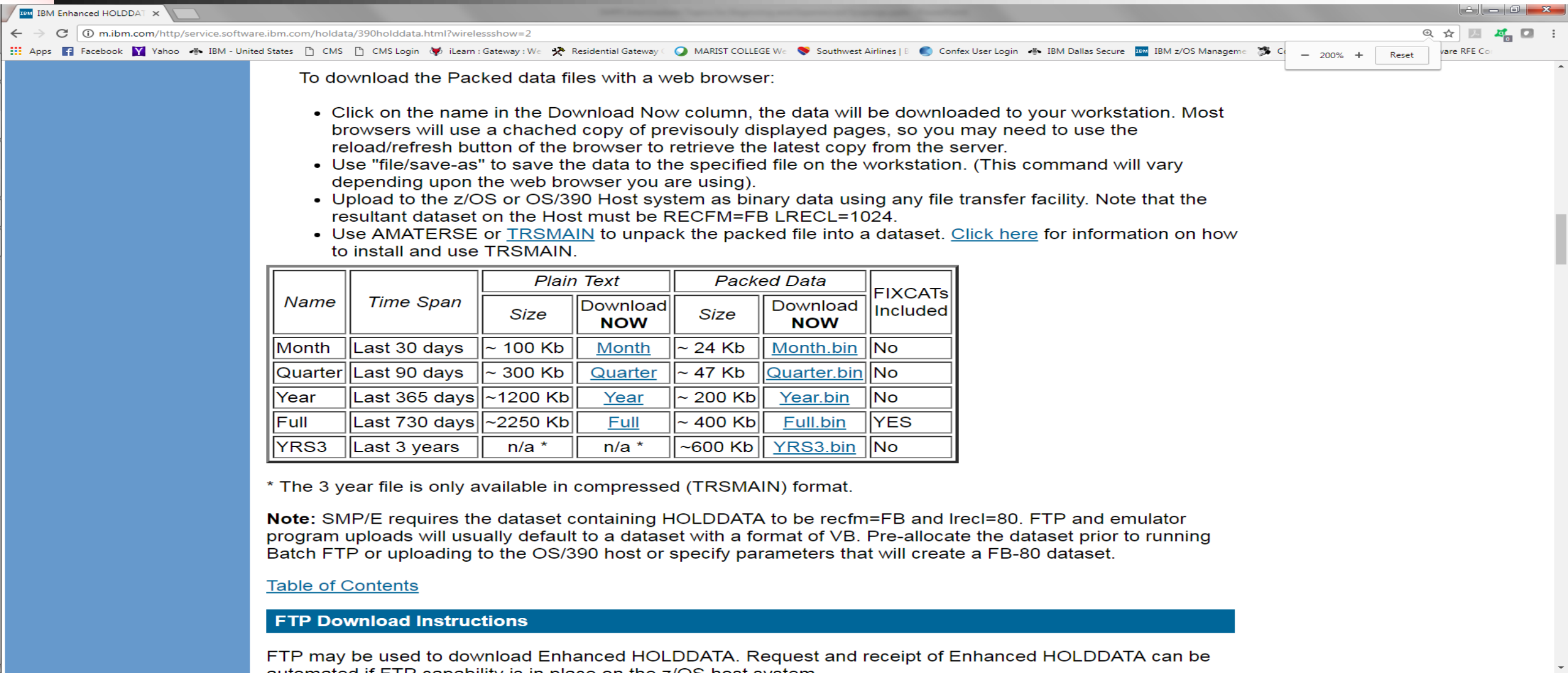
Enhanced HOLDDATA

- Enhanced HOLDDATA notifies SMP/E users of PTFs in Error (PEs), High Impact PERvasive APARs (HIPERs), as well as FIX CATegory (FIXCAT) holds for IBM maintenance.
- Enhanced HOLDDATA Home Page
- You want to download the Full.bin
  - Two years of HOLDDATA, updated daily!
  - It's the only download that includes FIXCAT (more FIXCAT later).
  - Recommendation: Download prior to an APPLY/ACCEPT operation.
  - Recommendation: If you use RECEIVE ORDER, you get full.bin by default.
  - Do not download plain text files (avoids ASCII-to-EBCDIC translation errors).

Enhanced HOLDDATA



Enhanced HOLDDATA



To download the Packed data files with a web browser:

- Click on the name in the Download Now column, the data will be downloaded to your workstation. Most browsers will use a chached copy of previsouly displayed pages, so you may need to use the reload/refresh button of the browser to retrieve the latest copy from the server.
- Use "file/save-as" to save the data to the specified file on the workstation. (This command will vary depending upon the web browser you are using).
- Upload to the z/OS or OS/390 Host system as binary data using any file transfer facility. Note that the resultant dataset on the Host must be RECFM=FB LRECL=1024.
- Use AMATERSE or TRSMAIN to unpack the packed file into a dataset. Click here for information on how to install and use TRSMAIN.

Name	*Time Span*	*Plain Text*		*Packed Data*		FIXCATs Included
		Size	Download **NOW**	*Size*	Download **NOW**	
Month	Last 30 days	~ 100 Kb	Month	~ 24 Kb	Month.bin	No
Quarter	Last 90 days	~ 300 Kb	Quarter	~ 47 Kb	Quarter.bin	No
Year	Last 365 days	~1200 Kb	Year	~ 200 Kb	Year.bin	No
Full	Last 730 days	~2250 Kb	Full	~ 400 Kb	Full.bin	YES
YRS3	Last 3 years	n/a *	n/a *	~600 Kb	YRS3.bin	No

* The 3 year file is only available in compressed (TRSMAIN) format.

Note: SMP/E requires the dataset containing HOLDDATA to be recfm=FB and lrecl=80. FTP and emulator program uploads will usually default to a dataset with a format of VB. Pre-allocate the dataset prior to running Batch FTP or uploading to the OS/390 host or specify parameters that will create a FB-80 dataset.

Table of Contents

FTP Download Instructions

FTP may be used to download Enhanced HOLDDATA. Request and receipt of Enhanced HOLDDATA can be

REPORT ERRSYSMODS: Batch Invocation JCL

- REPORT ERRSYSMODS JCL to show all missing PEs and HIPERs:

```
//IBMUSERD JOB 'IBMUSER',CLASS=A,NOTIFY=&SYSUID,
//             MSGCLASS=X,REGION=0M,MSGLEVEL=(1,1)
//S1       EXEC PGM=GIMSMP,PARM='PROCESS=WAIT',DYNAMNBR=120
//SMPCSI   DD DISP=SHR,DSN=MVS.GLOBAL.CSI
//SMPCNTL  DD *
  REPORT
       ERRSYSMODS
       ZONES(
             MVST
            )
              .
/*
//
```

REPORT ERRSYSMODS Output

- REPORT ERRSYSMODS output:

```
PAGE 0001  - NOW SET TO GLOBAL ZONE          DATE 10/01/17  TIME 01:23:19  SMP/E 36.77   SMPRPT   OUTPUT

EXCEPTION SYSMOD REPORT FOR ZONE MVST

HOLD      SYSMOD    APAR       ---RESOLVING SYSMOD----    HOLD     HOLD
FMID      NAME      NUMBER     NAME     STATUS RECEIVED   CLASS    SYMPTOMS
-------------------------------------------------------------------------------

EDU1H01   UI33409   AI78800   UI46369   GOOD   NO         PE
HBB77A0   HBB77A0   AA49506   UA92245   GOOD   NO         HIPER    DAL,FUL,PRV
                    AA49561   UA82760   GOOD   NO         HIPER    FUL,SYSPLXDS
<snip>
                    AA52531   ***NONE                     HIPER    FUL
                    AA52618   UA92282   GOOD   NO         HIPER    FUL,SYSPLXDS
                    AA52676   ***NONE                     HIPER    FUL
<snip>
          UA81297   AA50970   UA83064   HELD   NO         PE
                    AA52075   UA91125   HELD   NO         PE
                    AA53290   UA92948   GOOD   NO         PE
<snip>
```

REPORT ERRSYSMODS with Statistics

- REPORT ERRSYSMODS output with statistics:

```
PAGE 0007   - NOW SET TO GLOBAL ZONE              DATE 10/01/17   TIME 01:23:19   SMP/E 36.77    SMPRPT
OUTPUT

EXCEPTION SYSMOD REPORT SUMMARY

 ZONE     FMID          TOTAL APARS          TOTAL RESOLVING
                       AGAINST FMID       SYSMODS AGAINST FMID
-------------------------------------------------------------------------------
------

MVST      EDU1H01             1                    1
          HBB77A0            87                   82
          HBKQ400             1                    1
          HCPT420             3                    3
          HCR77B0             5                    5
          HDZ222N            10                    8
          HDZ2220            87                   81
          HIF7P02             1                    1
          HIP6220            21                   20
```

REPORT ERRSYSMODS with RECEIVE Stmts.

- REPORT ERRSYSMODS output with generated RECEIVE statements:

```
SET BDY (GLOBAL ). /* REMOVE COMMENT IF DOING RECEIVE
RECEIVE  SELECT (
         UI46369
         UA92245
         UA82760
         UA82567
         UA82632
         UA82532
         UA82533
         UA83237
         UA82427
         UA82551
         UA82386
<snip>
         UA83987
         UI50502
                )
          SYSMODS.
                  REMOVE COMMENT IF DOING RECEIVE */
```

REPORT ERRSYSMODS Generated APPLY Stmts.

- REPORT ERRSYSMODS output with generated APPLY statements:

```
RESETRC.
SET BDY (MVST   ).
APPLY    SELECT (
 /* UI46369             RESOLVES AI78800 FOR UI33409 FMID(EDU1H01) */
 /* UA92245             RESOLVES AA49506 FOR HBB77A0 FMID(HBB77A0) */
 /* UA82760             RESOLVES AA49561 FOR HBB77A0 FMID(HBB77A0) */
 /* UA82567             RESOLVES AA49822 FOR HBB77A0 FMID(HBB77A0) */
 /* UA82632             RESOLVES AA50084 FOR HBB77A0 FMID(HBB77A0) */
 /* UA82532             RESOLVES AA50162 FOR HBB77A0 FMID(HBB77A0) */
 /* UA82533             RESOLVES AA50218 FOR HBB77A0 FMID(HBB77A0) */
 /* UA83237             RESOLVES AA50341 FOR HBB77A0 FMID(HBB77A0) */
<snip>
 /* UA83348             RESOLVES IA51541 FOR UA82284 FMID(HJE77A0) */
 /* UA83802             RESOLVES AA51980 FOR UA83247 FMID(HZFS420) */
 /* UA83802             RESOLVES AA51980 FOR UA83412 FMID(HZFS420) */
 /* UA83802             RESOLVES AA51980 FOR UA83571 FMID(HZFS420) */
                )
          GROUP CHECK
          BYPASS(HOLDSYSTEM).
```

REPORT ERRSYSMODS

- Best result from REPORT ERRSYSMODS:

```
PAGE 0001  - NOW SET TO GLOBAL ZONE          DATE 10/01/17  TIME 01:00:10  SMP/E 36.77   SMPRPT   OUTPUT

EXCEPTION SYSMOD REPORT FOR ZONE MVST

HOLD      SYSMOD   APAR      ---RESOLVING SYSMOD----   HOLD    HOLD
FMID      NAME     NUMBER    NAME     STATUS RECEIVED  CLASS   SYMPTOMS
```

FIXCATs – The Best Enhancement EVER!

- Preventive Service Planning (PSP) correlated required service for operating system, program products, and hardware
  - Lists of APARs and PTFs which were manually verified by sysprog
  - Extremely time-consuming and error-prone
- PSP buckets were replaced by FIXCATs: Fix Categories
  - Greatest service enhancement EVER!
  - Required service, toleration, hardware microcode, etc. all in one place.
  - Fully integrated into SMP/E.
  - Automated method to ensure required maintenance applied to system
- Many Independent Software Vendors (ISVs) take advantage of this feature to create their own FIXCATs.

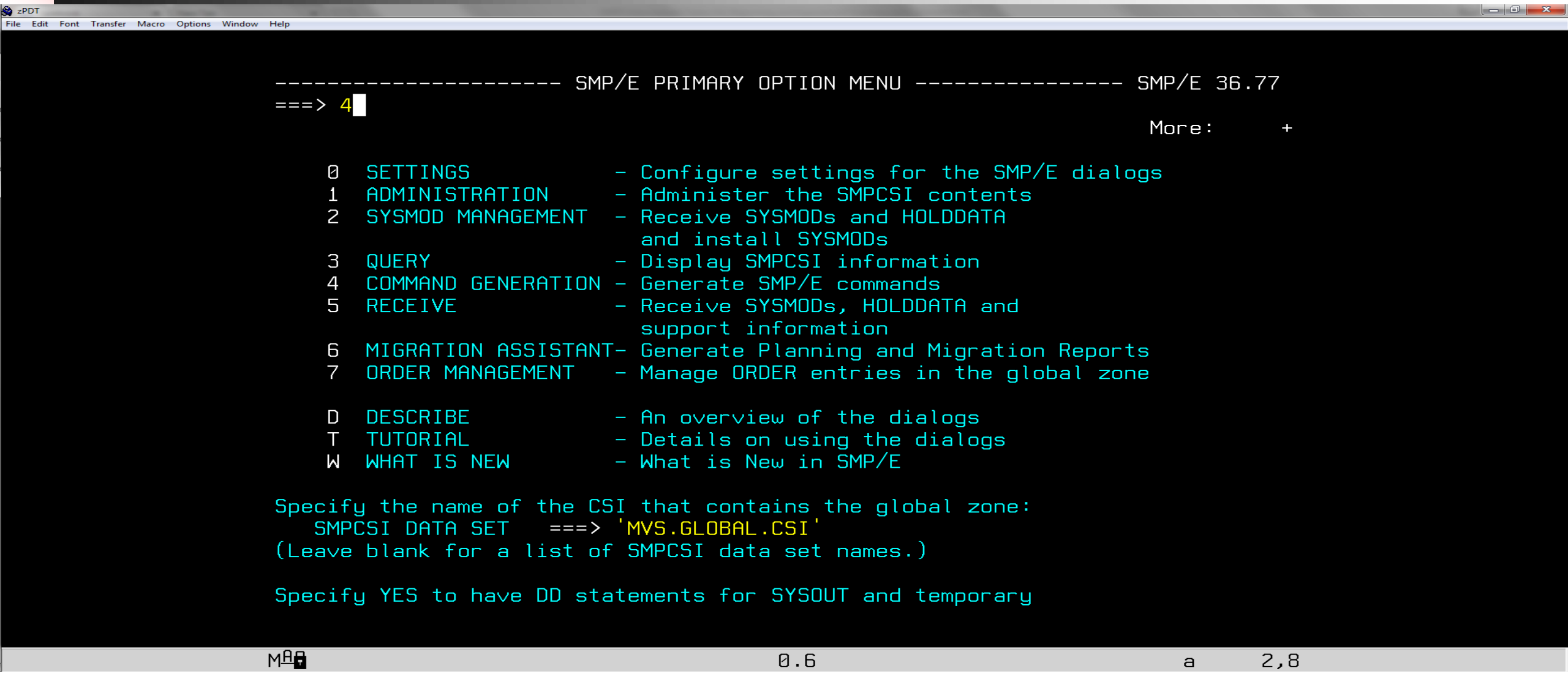
FIXCATs – The Best Enhancement EVER!

- Complete list of IBM FIXCATs here.
- Complete list of CA Technologies FIXCATs here.
- Other ISVs FIXCATs may be located on their Tech Support websites.

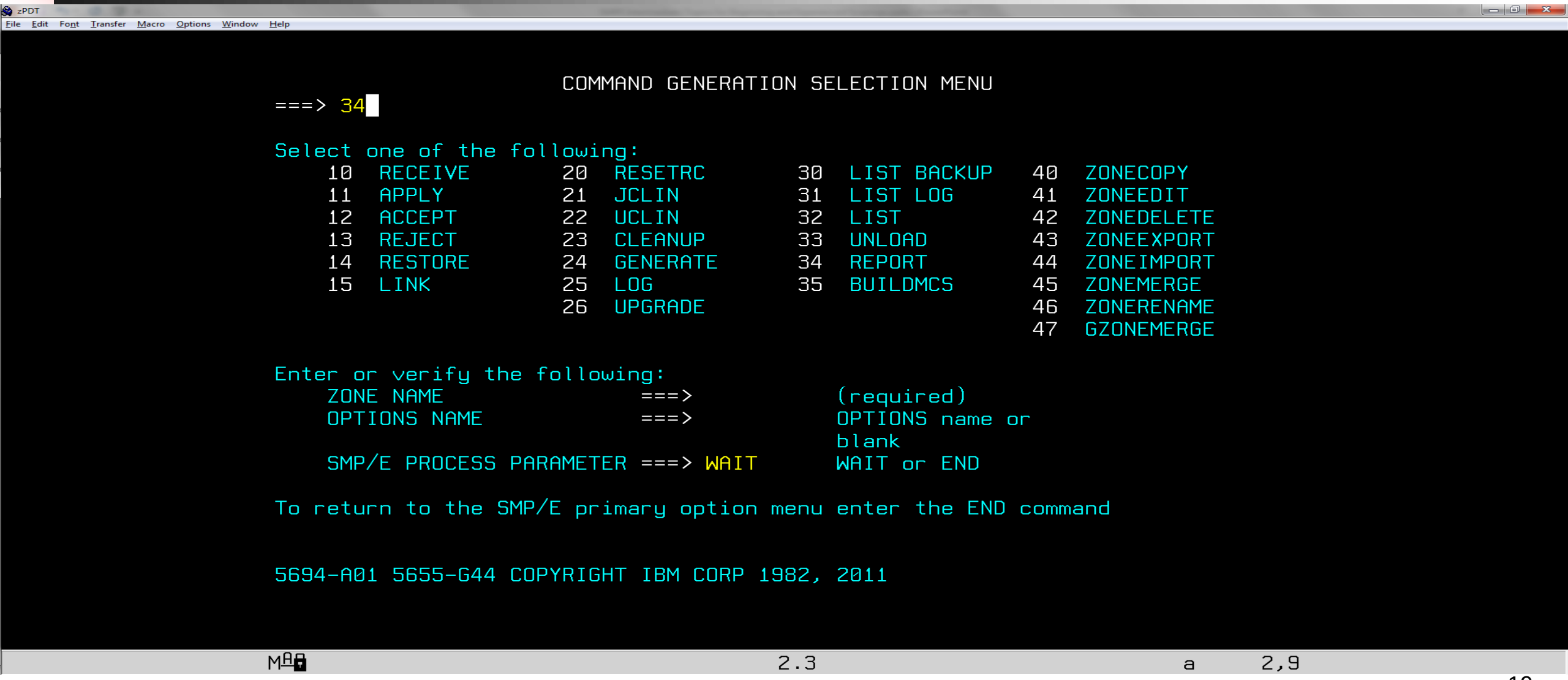
FIXCAT Explorer - How to Access and Use

- FIXCAT Explorer within SMP/E is the best tool for working with FIXCATs.
- FIXCAT Explorer is accessed via SMP/E ISPF Dialog option 4 (Command Generation).
- Select option 34 REPORT from Command Generation Selection Menu.
- Select 5 for REPORT MISSINGFIX.
- Enter YES next to FIXCAT to specify FIXCATs.
- Enter YES for FIXCAT Explorer on REPORT FIXCAT Panel.

FIXCAT Explorer – Screen Capture 1

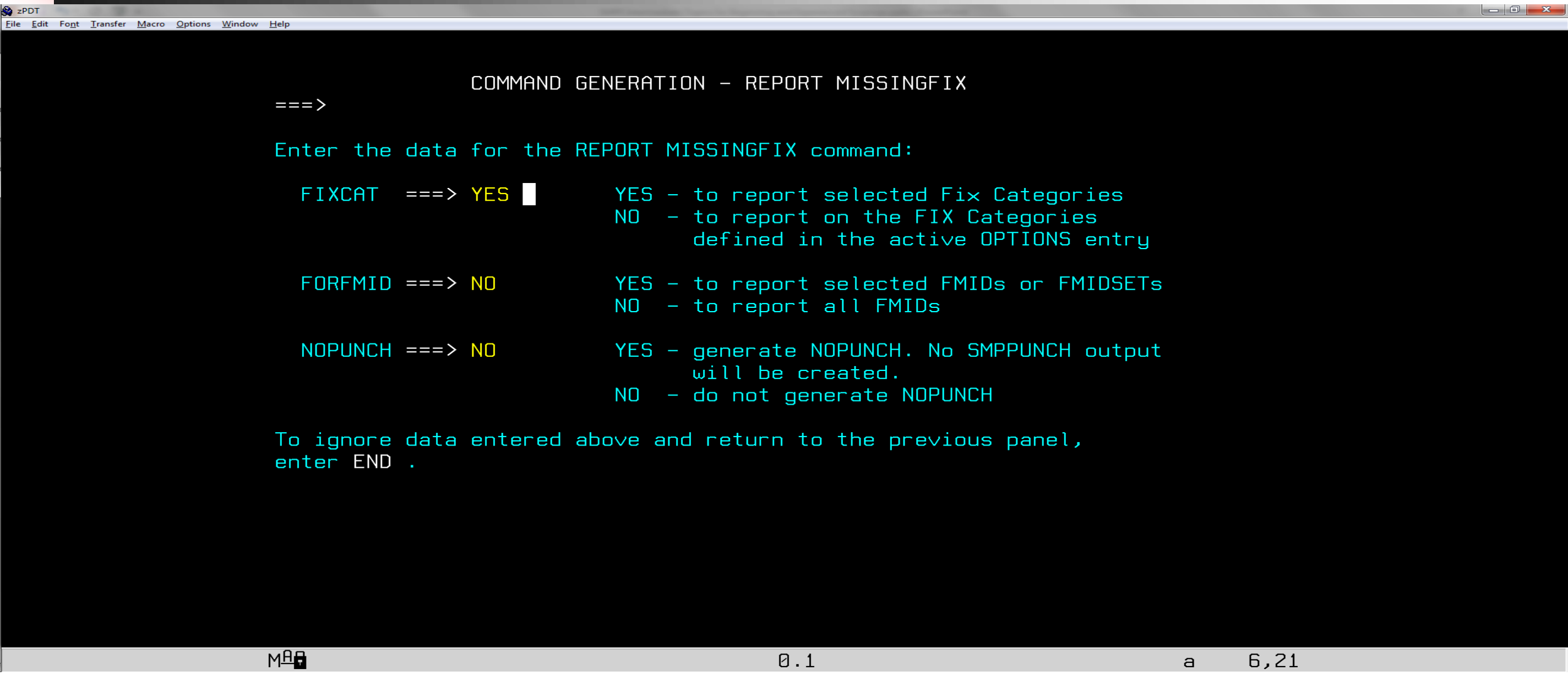


FIXCAT Explorer – Screen Capture 2

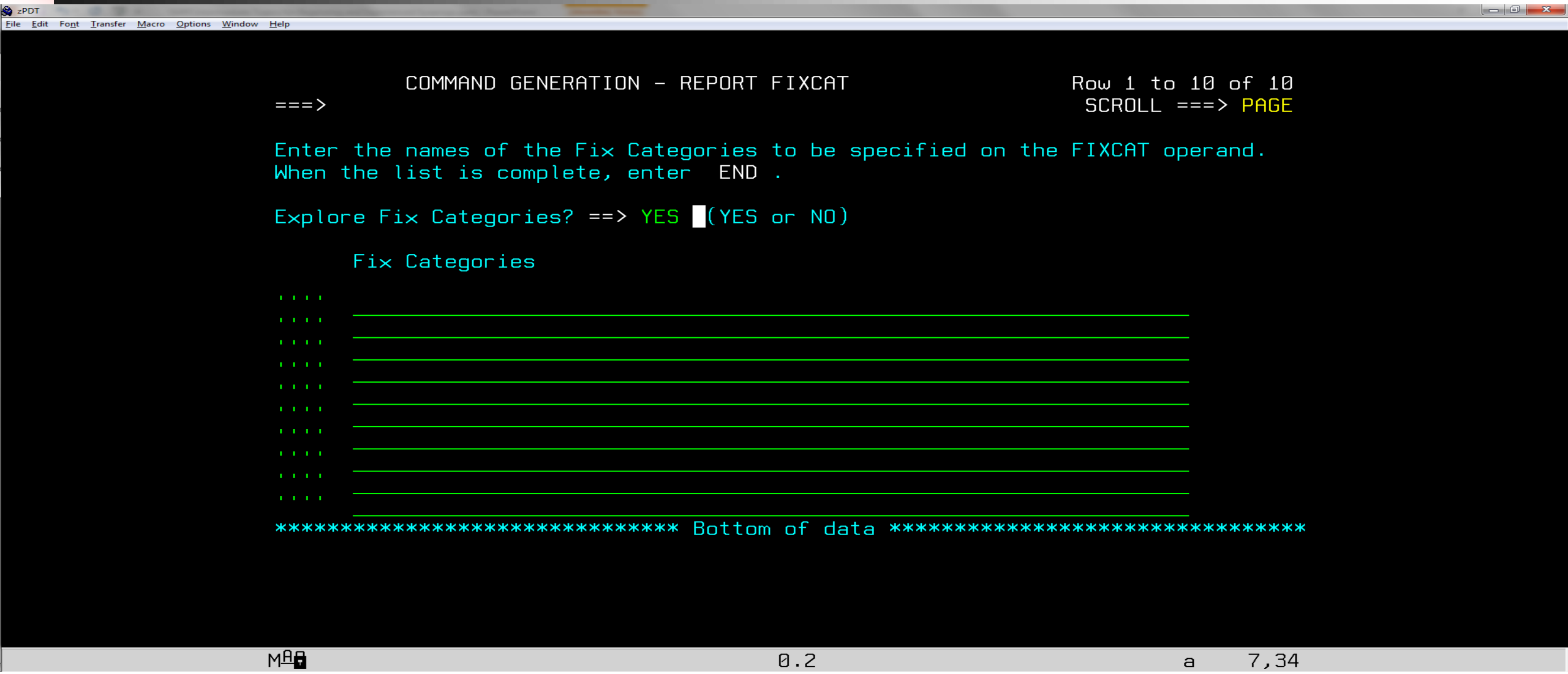


FIXCAT Explorer – Screen Capture 3

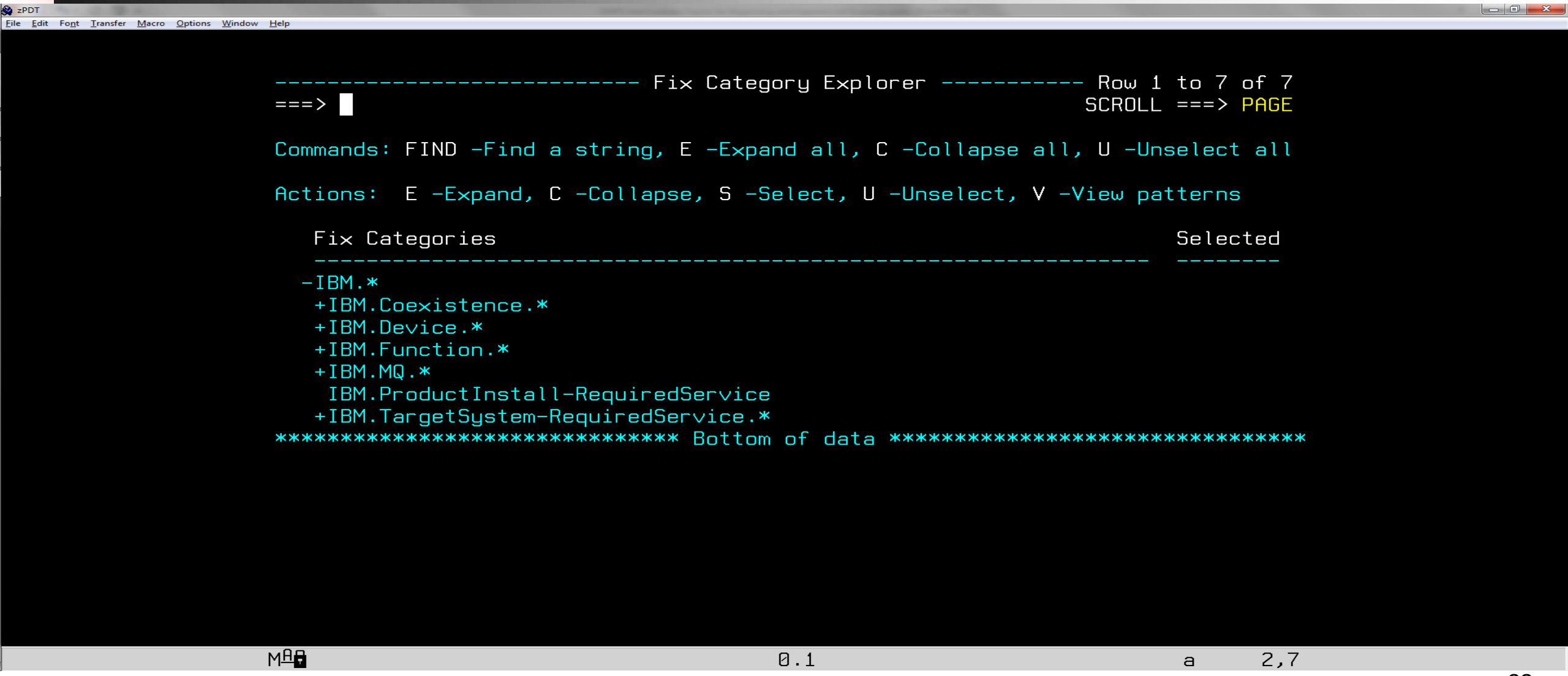
FIXCAT Explorer – Screen Capture 4



FIXCAT Explorer – Screen Capture 5



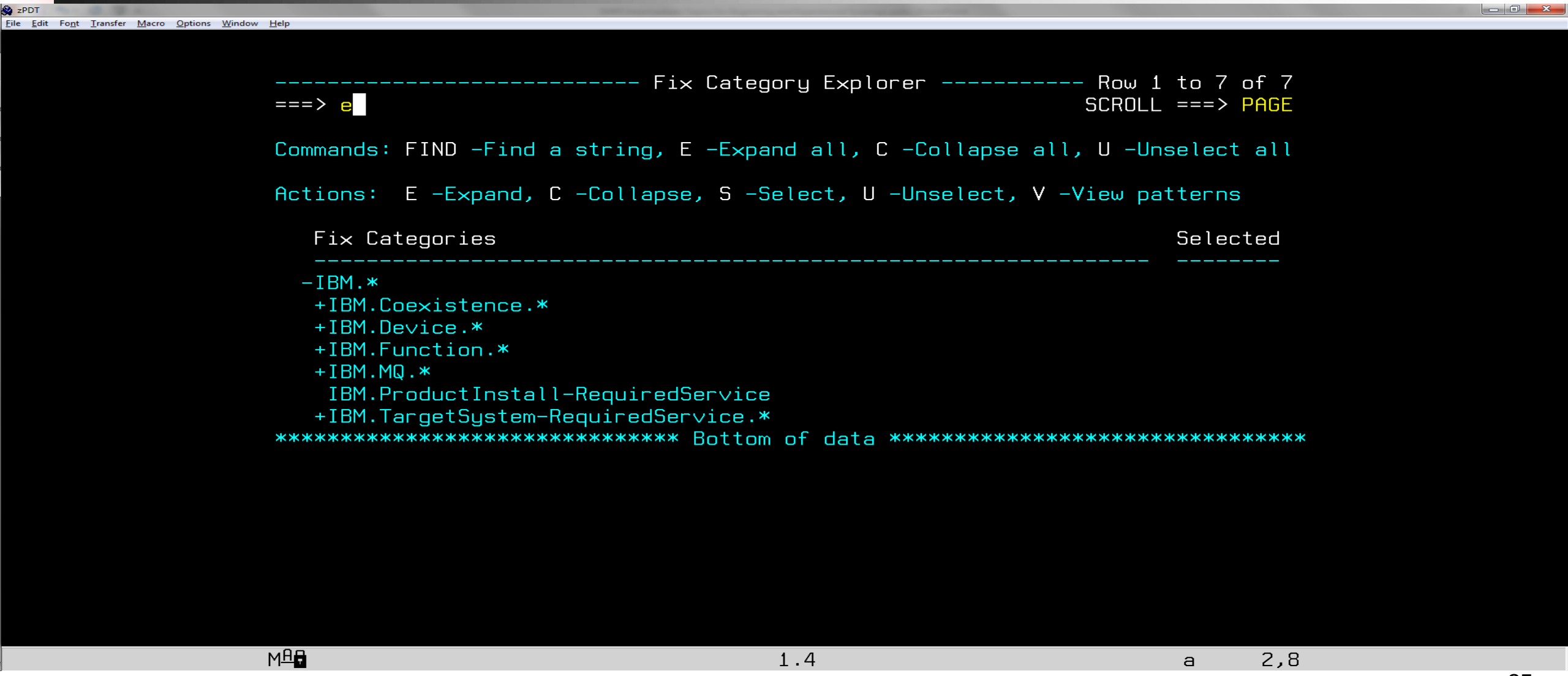
FIXCAT Explorer – Screen Capture 6



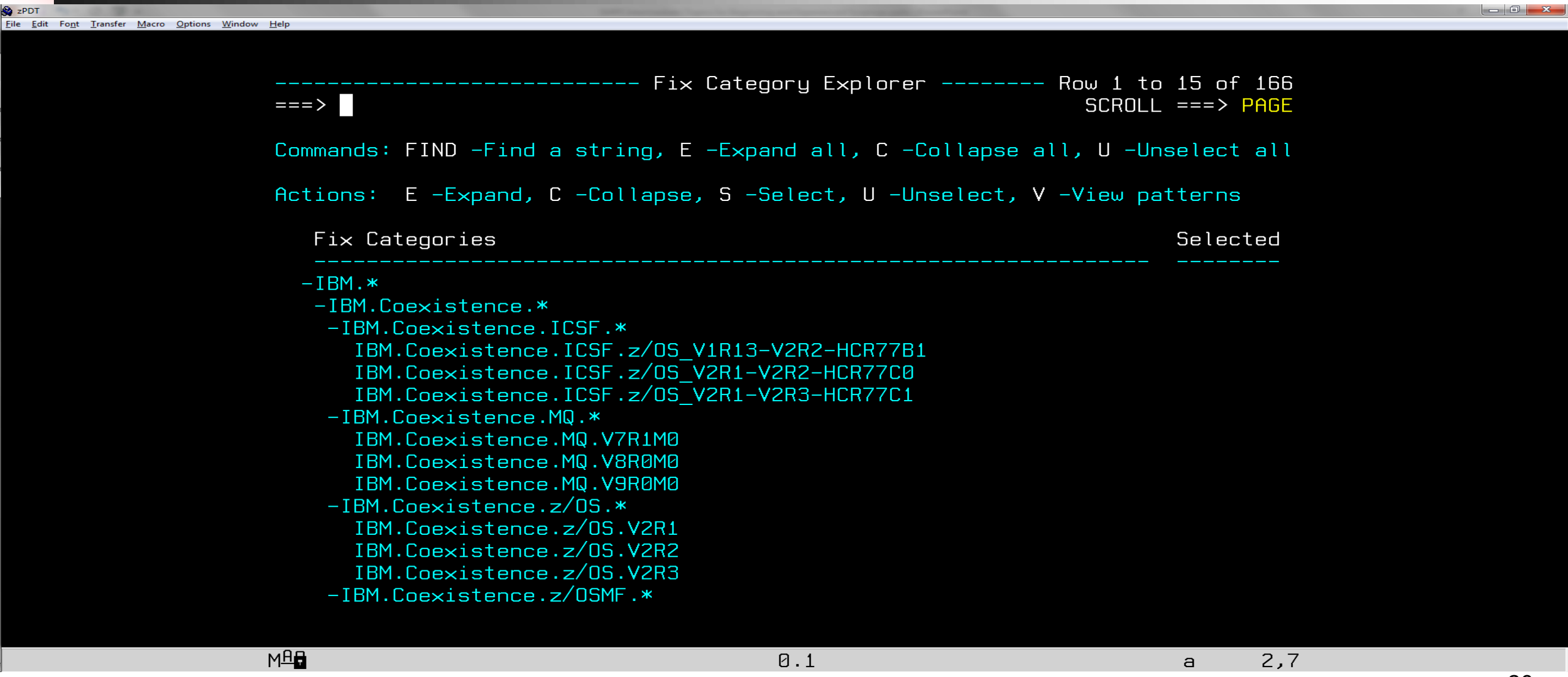
FIXCAT Explorer – Primary and Line Commands

- From FIXCAT Explorer, you have primary commands:
  - FIND - Find a string (will only find on displayed panel, will not EXPAND)
  - E - Expand All
  - C - Collapse All
  - U - Unselect All
- Following line commands available for each FIXCAT entry:
  - E - Expand
  - C - Collapse
  - S - Select
  - U - Unselect
  - V - View Patterns (IMHO, not really useful)

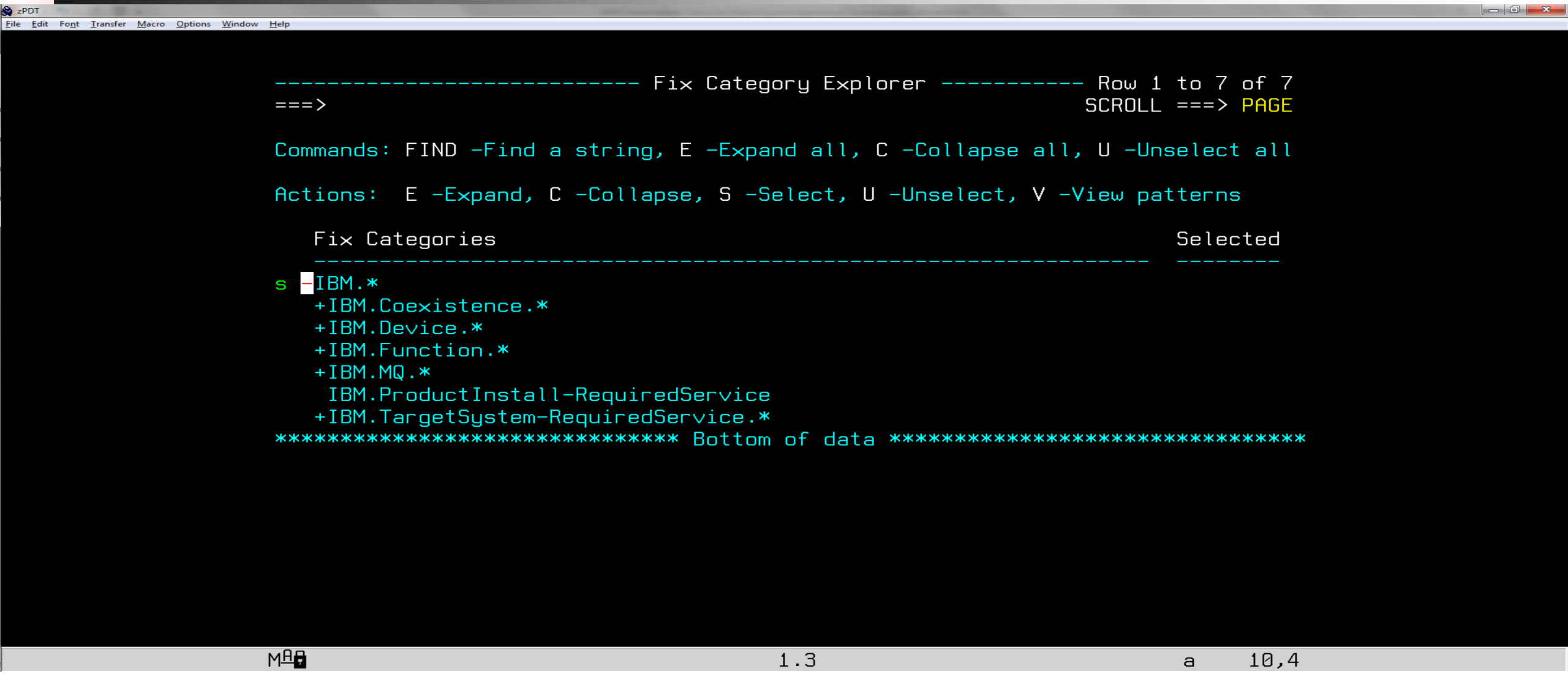
FIXCAT Explorer – Screen Capture 7



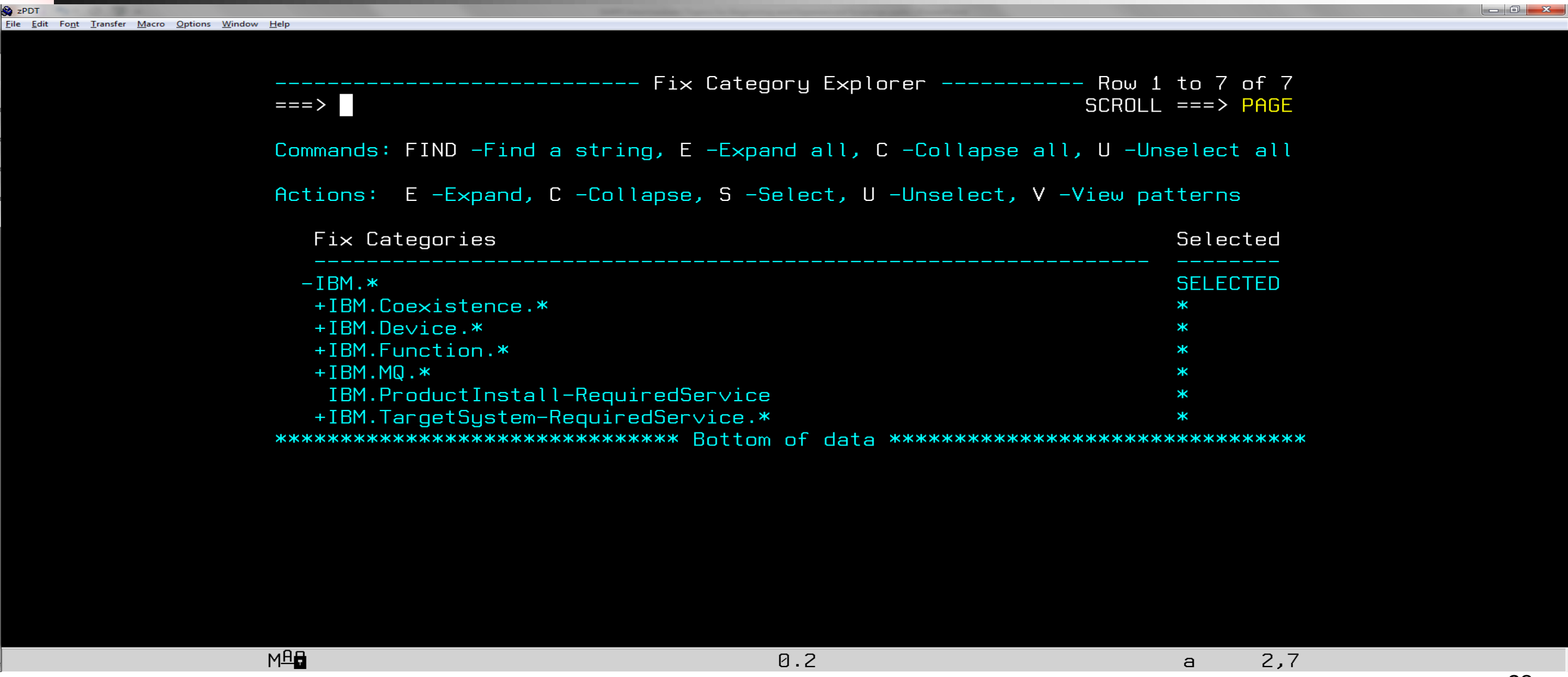
FIXCAT Explorer – Screen Capture 8



FIXCAT Explorer – Screen Capture 9



FIXCAT Explorer – Screen Capture 10



REPORT MISSINGFIX Sample Batch JCL

REPORT MISSINGFIX JCL to show all missing IBM FIXCATs:

```
//IBMUSERD JOB 'IBMUSER',CLASS=A,NOTIFY=&SYSUID,
//             MSGCLASS=X,REGION=0M,MSGLEVEL=(1,1)
//S1       EXEC PGM=GIMSMP,PARM='PROCESS=WAIT',DYNAMNBR=120
//SMPCSI   DD DISP=SHR,DSN=MVS.GLOBAL.CSI
//SMPCNTL  DD *
  SET    BOUNDARY (GLOBAL).
  REPORT
         MISSINGFIX
         ZONES (MVST)
         FIXCAT(IBM.*).
/*
//
```

REPORT MISSINGFIX: Output

REPORT MISSINGFIX output

```
PAGE 0001   - NOW SET TO GLOBAL ZONE              DATE 10/01/17   TIME 00:34:29   SMP/E 36.77    SMPRPT
OUTPUT

MISSING FIXCAT SYSMOD REPORT FOR ZONE MVST

                                HOLD     MISSING  HELD       ____RESOLVING SYSMOD_____
FIX CATEGORY      FMID          CLASS    APAR     SYSMOD     NAME      STATUS  RECEIVED
_______________   _______  ________  _______  _______  _______  ______  _________
IBM.Function.Multi-FactorAuthentication
                  HRF77A0            AA50016  HRF77A0    UA81904   HELD    YES

PAGE 0002   - NOW SET TO GLOBAL ZONE              DATE 10/01/17   TIME 00:34:29   SMP/E 36.77    SMPRPT
OUTPUT

MISSING FIXCAT SYSMOD REPORT FOR ZONE MVST    - FIXES FOR HELD RESOLVING SYSMODS

HOLD      HELD                  ____RESOLVING SYSMOD_____   HOLD
FMID      SYSMOD    APAR      NAME      STATUS  RECEIVED    CLASS
_______   _______   _______   _______   ______  _________   _______
HRF77A0   UA81904   AA50825   ***NONE                       PE
```

REPORT MISSINGFIX Best Possible Output

The best result from REPORT MISSINGFIX:

```
PAGE 0001  - NOW SET TO GLOBAL ZONE          DATE 10/01/17  TIME 17:48:32  SMP/E 36.77
SMPRPT   OUTPUT

MISSING FIXCAT SYSMOD REPORT FOR ZONE MVST

                              HOLD     MISSING  HELD      ____RESOLVING SYSMOD_____
FIX CATEGORY      FMID        CLASS    APAR     SYSMOD    NAME      STATUS  RECEIVED
_________________ _______     _______  _______  _______   _______   ______  ________
***NONE
```

APPLY FIXCATs APPLY Control Statements

- To APPLY FIXCATs, specify FIXCAT name in SOURCEID parm.
- Wildcards are allowed.
- Following SMPCNTL statements will APPLY CHECK all IBM FIXCATs:

```
APPLY    CHECK
         GROUPEXTEND
         SOURCEID (
                    IBM.*
                    )
         BYPASS   (
                    HOLDSYSTEM
                    )
         NOJCLINREPORT .
```

APPLY FIXCATs – Gotchas and Best Practices

- FIXCAT parameter for APPLY/ACCEPT can be confusing.
- By default, FIXCAT HOLDs are BYPASSed
  - FIXCAT HOLDs are treated differently from other HOLDs
  - Other HOLDs are in effect unless BYPASSed
  - FIXCAT parm on APPLY/ACCEPT enables use of FIXCAT HOLDs
- Due to confusion, I don't recommend using FIXCAT HOLDs on APPLY/ACCEPT.
  - Use FIXCAT identifier in SOURCEID on APPLY/ACCEPT instead.
  - Use output from REPORT MISSINGFIX instead.

Problem - Mischaracterized HOLDDATA

- Do you review ALL HOLDDATA during APPLY/ACCEPT? You should!
- Some sysprogs ignore categories like DOC, IPL, ENH, etc., which creates an unnecessary exposure.
- Lately, I've seen a significant increase in mischaracterized HOLDDATA. For example: DOC is really ACTION, ENH is really EC, etc.
- Here are two recent examples:
  - OA51538 - ENH hold should have been EC.
  - PI28548 - DOC hold should have been ACTION.

Problem - Mischaracterized HOLDDATA

```
++ HOLD(UA91956) SYS FMID(HDZ2210) REASON(ENH) DATE(17142)
   COMMENT
    (************************************************************
     * FUNCTION AFFECTED: DFSMS                          (OA51538) *
     *                      DFSMSdfp                               *
     ************************************************************
     * DESCRIPTION      : Product Enhancement                     *
     *                    Exploitation (Timing)                   *
     ************************************************************
     * TIMING           : Post-APPLY                              *
     ************************************************************
     This enhancement increases the upper limit on the number of
     tracks being read or written at one time during volume
     synchronization.  In addition, in order to get the greatest
     performance improvements, the following minimum LIC level is
     required:

     For DS8880 (R8.2) - 88.22.34.0 - R8.2 SP2.1

     Also, having 16Gb host adapters on both the z processor at the
     DR site and the primary storage controls may provide increased
     performance.).
```

Problem - Mischaracterized HOLDDATA

```
++ HOLD(UI25311) SYS FMID(HLE7790) REASON(DOC) DATE(16176)
   COMMENT
    (There are new COBOL library modules added by the current PTF.
     These modules are shipped in the LE SCEERUN dataset. After you
     have installed the PTF, the CICS System Definition (CSD)file
     needs to be updated to include the following new library
     modules. This applies whether you are running COBOL 5.2 or COBOL
     5.1.1 programs.

       IGZXLPKB
       IGZXLPKD
       IGZXLPKE
       IGZXLPKF
       IGZXLPKG
       IGZXPK2

     You can update your existing CSD file to include the following
     DEFINEs

       DEFINE PROGRAM(IGZXLPKB) GROUP(CEE)
       DEFINE PROGRAM(IGZXLPKD) GROUP(CEE)
       DEFINE PROGRAM(IGZXLPKE) GROUP(CEE)
       DEFINE PROGRAM(IGZXLPKF) GROUP(CEE)
       DEFINE PROGRAM(IGZXLPKG) GROUP(CEE)
       DEFINE PROGRAM(IGZXPK2)  GROUP(CEE)

     These modules are also eligible for the Link Pack area. Please
     also refer to the Tech. Note in
     http://www.ibm.com/support/docview.wss?uid=swg21697364).
```

Problem - Mischaracterized HOLDDATA

```
++ HOLD(UI49242) SYS FMID(HLE7790) REASON(DOC) DATE(17213)
   COMMENT
    (*************************************************************
    * FUNCTION AFFECTED: LANGUAGE ENVIRONMENT           (PI84517) *
    *                    Enterprise COBOL Compiler                *
    *************************************************************
    * DESCRIPTION      : Documentation updates                    *
    *************************************************************
    * TIMING           : TIMING : post-Apply                      *
    *************************************************************
    1. Optional Module IGZUOPT
    The application can now provide an optional module IGZUOPT to
    control the processing of COBOL CEEDUMP. Refer to the technote
    below for details about this module:
    http://www-01.ibm.com/support/docview.wss?uid=swg22006359
    Follow the steps below when installing this PTF:

    1.1 LE APAR
    Install the LE APAR PI75601 to update the CEECCSD sample in the
    SCEESAMP sample dataset.
```

Problem - Mischaracterized HOLDDATA

```
++ HOLD(UI49242) SYS FMID(HLE7790) REASON(DOC) DATE(17213)
   COMMENT

     1.2 CICS
     The normal procedure for setting up CICS involves updating the
     CICS System Definition (CSD) file. This defines the program
     modules that can be used under CICS. After installing this PTF,
     add the module name IGZUOPT to the CDS definition by using:
        DEFINE  PROGRAM(IGZUOPT)  GROUP(CEE)
     Or you can use the CEECCSD sample in step 1 to set up the CSD
     file.

     1.3 This module is optional, and is to be provided by the
     COBOL application, if needed, to control CEEDUMP processing.
     It is not necessary to put this module into LPA.

     2. New messages added

     New COBOL Runtime messages are added IGZ0319-0330 and
     IGZ0335-0341.

     Refer to the technote below for details about the messages:
     http://www-01.ibm.com/support/docview.wss?uid=swg22005368).
```

Problem - Mischaracterized HOLDDATA - PMRs

- If you discover mischaracterized HOLDDATA, open a PMR.
- IBM Service agrees that mischaracterized HOLDDATA is APAR-able, so don't let Level 2 convince you otherwise.
- If Level 2 won't fix it, escalate your PMR to a duty manager.
- If IBM still refuses, email me and I'll escalate within IBM Service.

Problem - Incorrect Packaging MODID Errors

- While extremely rare, IBM/ISVs can have SMP/E packaging errors: it does happen!
- Example: A MODID error showing affected module and maintenance level

```
GIM38201E ** THERE IS A MODID ERROR FOR MOD ENTRY IBMMODUL IN SYSMOD UA99999.
GIM31901I    SYSMOD UA99999 DOES NOT SPECIFY UA99998 ON THE PRE OR SUP OPERAND.
             UA99998 IS THE RMID FOR MOD IBMMODUL THAT IS CURRENTLY INSTALLED.
GIM22601I    APPLY PROCESSING FAILED FOR SYSMOD UA99999.
```

- If you experience one of these errors, report it to IBM or the ISV immediately.
- I've never had an issue with getting MODID errors addressed.

USERMODs: Benefits Analysis 1

- USER MODifications (USERMODs) are used to customize IBM or vendor-supplied elements:
  - They package/manage needed capabilities and functions required locally.
  - They are used to correct a bug until IBM or an ISV issues a patching fix.
  - They are a standard means to install a system exit, etc.
  - For example, SMF exit IEFACTRT and ISPF ISR@PRIM are commonly packaged/installed USERMODs.

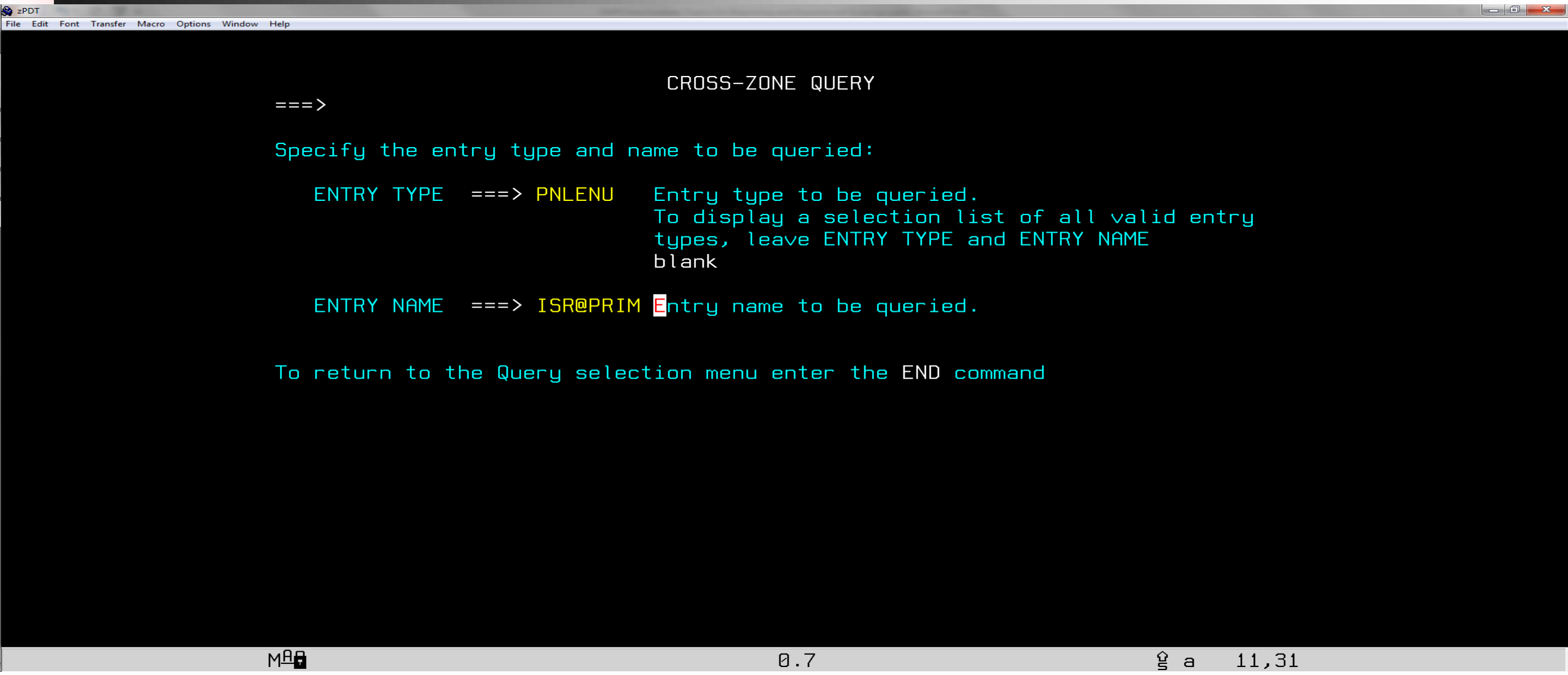
USERMODs: Benefits Analysis 2

- The primary function for USERMODs is to alert you to IBM maintenance for element(s) that compose your USERMOD, so you can remediate any change(s).
- USERMODs make some sysprogs uneasy, but they are there to help!
- USERMODs ensure that your system is correctly configured and serviced to meet your installation's requirements.

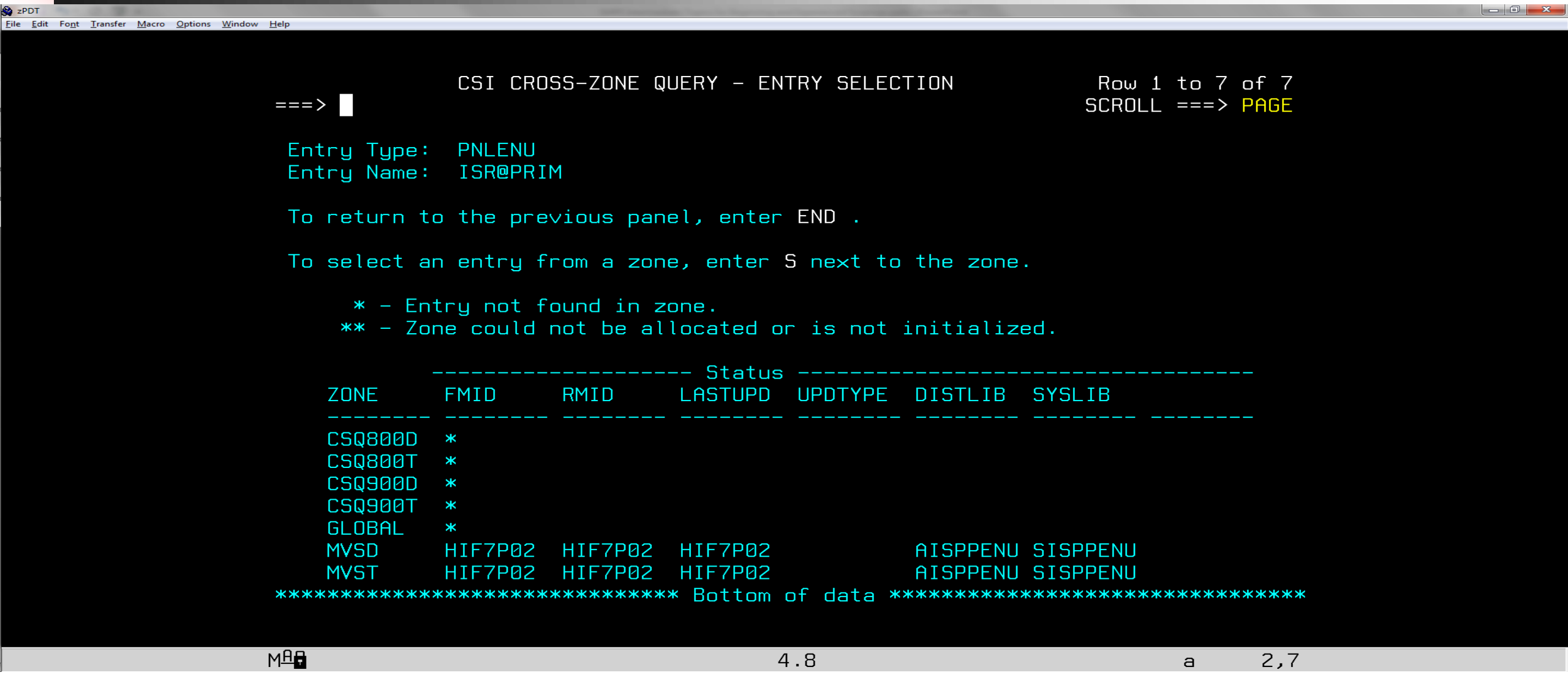
USERMODs: Getting Start Step 1

- USERMODs are often simple - believe it or not!
- Complexity occurs as more elements are added to USERMODs.
- First step in creating USERMOD
  - Determine affected element and its maintenance level
  - Use SMP/E option 3.2 Cross-zone query if you know element name and type
  - Use SMP/E option 3.1 CSI Query if you only know element name
- In the following example, ISR@PRIM menu is at base HIF7P02.

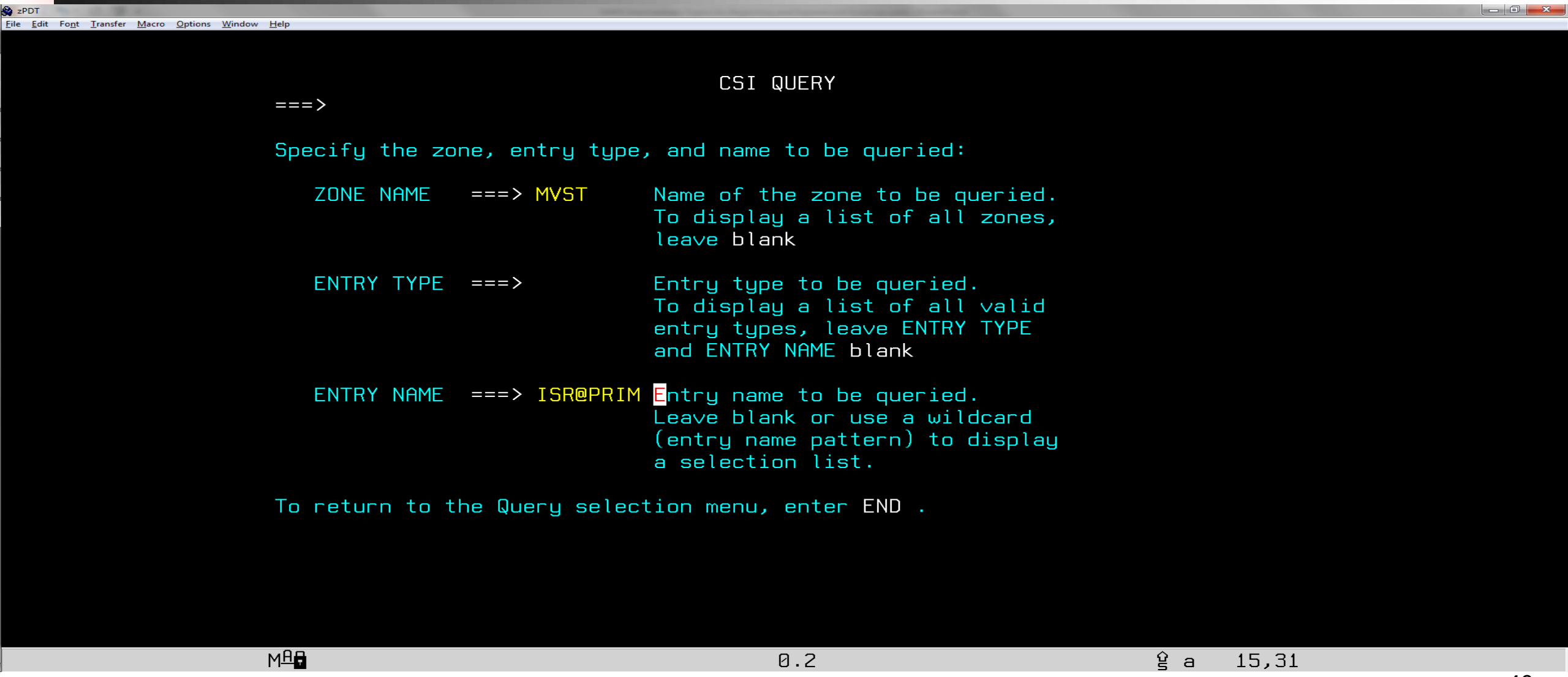
USERMODs – Screen Capture 1



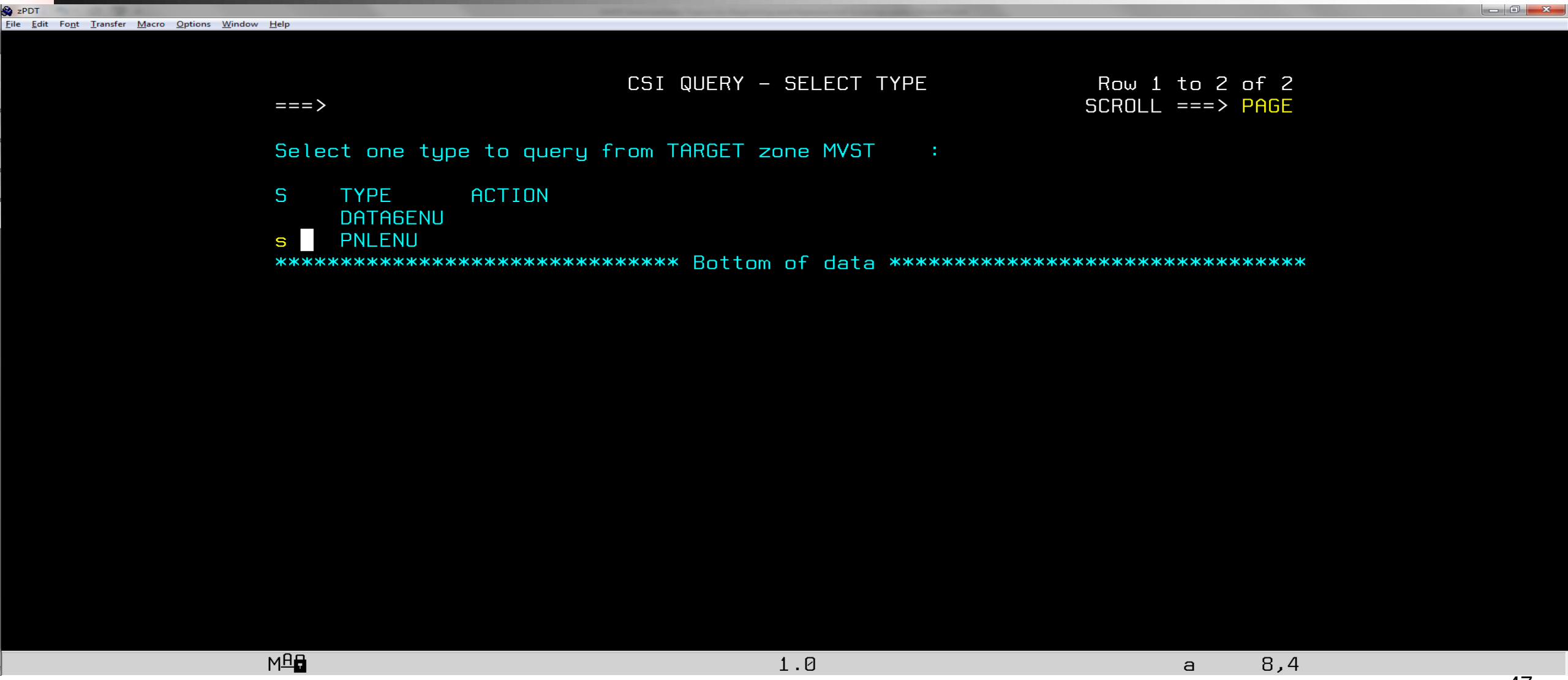
USERMODs – Screen Capture 2



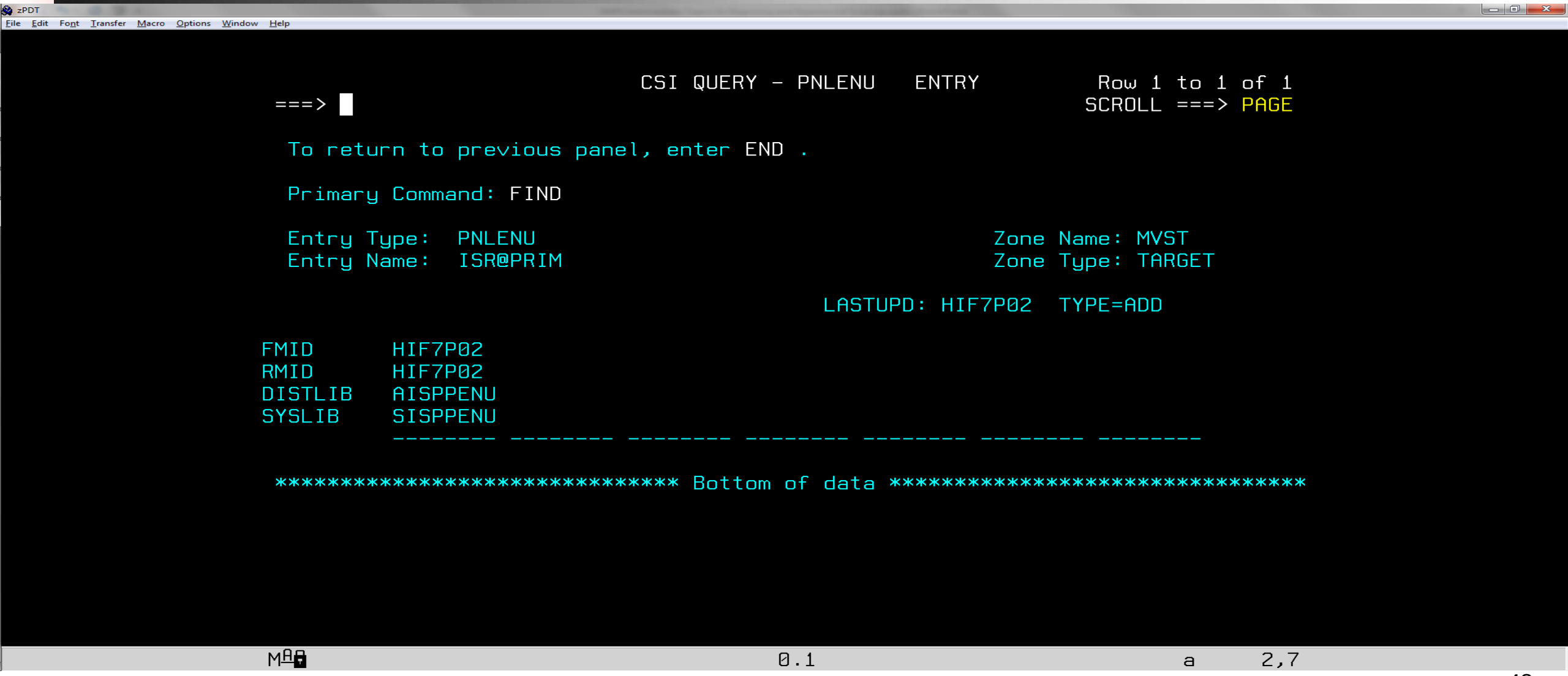
USERMODs – Screen Capture 3



USERMODs – Screen Capture 4



USERMODs – Screen Capture 5



USERMODs: Getting Started Step 2

- The second step is to create SMP/E MCS statements as in the following example:

```
//TOMPANEL DD DISP=SHR,DSN=TCONLEY.ISPF.PANELS
//SMPPTFIN DD DATA,DLM=@@
++USERMOD(UMISPFM) REWORK(20172150).
++VER (Z038) FMID(HIF7P02).
++PNLENU(ISR@PRIM) DISTLIB(AISPPENU) TXLIB(TOMPANEL).
```

USERMODs: REWORK and TXLIB

- REWORK is an 8-character level indicator for a USERMOD
  - By *convention*, the indicator is a 7-digit Julian date in yyyyddd format.
  - Power Users Tip: Use the 8th character for incremental versions created on same day!
  - This allows you to re-RECEIVE without REJECTing PTF from GLOBAL zone.
  - If REWORK is higher level, the USERMOD will be replaced upon RECEIVE.
- TXLIB is the DDDEF where panel source resides (your input file)
  - TCONLEY.ISPF.PANELS(ISR@PRIM) is a "new" ISPF Primary Option Menu.

USERMODs: Inline Source

- Optionally, element source (such as the ISPF panel below) can be inline. . .

```
//SMPPTFIN DD DATA,DLM=@@
++USERMOD(UMISPFM) REWORK(20172150).
++VER (Z038) FMID(HIF7P02).
++PNLENU(ISR@PRIM) DISTLIB(AISPPENU).
)PANEL KEYLIST(ISRSAB,ISR) IMAGE(&ZIMGNAM,&ZIMGROW,&ZIMGCOL)
)ATTR DEFAULT(  ) FORMAT(MIX)              /* ISR@PRIM - ENGLISH - 7.1 */
<snip>
FIELD(ZEXX) VAR(ZCMD) VAL(X)
)END
/* 5694-A01     COPYRIGHT IBM CORP 1982, 2009 */
/* ISPDTLC Release: 7.1.  Level: PID                                    */
/* z/OS 02.01.00.  Created - Date: 19 Nov 2014, Time: 18:22             */
```

- Panel source ends with @@ SMPPTFIN DLM or ++ for next element.

USERMODs: Best Practices

- Recommend UM<component><identifier> naming convention
  - UM - UserMod, component ISPF, identifier M for Menu - UMISPFM
  - Another method - <component><identifier> (e.g. ISPFMNU)
- Once created, a USERMOD will require changes if a MODID error occurs.

USERMODs: Best Practices

- First step is to RESTORE USERMOD
  - If you don't like to ACCEPT maintenance, start liking it.
  - Failure to ACCEPT maintenance is the main inhibitor for upgrading USERMODs.

- Second step is to alter USERMOD MCS for new maintenance
  - Determine RMID for affected USERMOD element and apply RMID.
  - REJECT/RECEIVE updated USERMOD (with REWORK, only RECEIVE is required).
  - APPLY updated USERMOD (do not use REDO unless directed by IBM/ISV).

USERMODs: Example

- Using ISR@PRIM example, new PTF UA12345 updates ISR@PRIM:

```
//SMPPTFIN DD DATA,DLM=@@
++USERMOD(UMISPFM) REWORK(20172550).     /* Was 20172150              */
++VER (Z038) FMID(HIF7P02) PRE(UA12345). /* Add PRE for new maint     */
++PNLENU(ISR@PRIM) DISTLIB(AISPPENU).
)PANEL KEYLIST(ISRSAB,ISR) IMAGE(&ZIMGNAM,&ZIMGROW,&ZIMGCOL)
)ATTR DEFAULT(  ) FORMAT(MIX)           /* ISR@PRIM - ENGLISH - 7.1 */
<snip>
FIELD(ZEXX) VAR(ZCMD) VAL(X)
)END
/* 5694-A01     COPYRIGHT IBM CORP 1982, 2009 */
/* ISPDTLC Release: 7.1.  Level: PID                                  */
/* z/OS 02.01.00.  Created - Date: 19 Nov 2014, Time: 18:22           */
```

- It really is that simple!

USERMODs: Regression Error Messages

- Following messages indicate regression for USERMOD IGYWDOP:

```
GIM38201E ** THERE IS A MODID ERROR FOR MOD ENTRY IGYCDOPT IN SYSMOD UK95907.
GIM31901I    SYSMOD UK95907 DOES NOT SPECIFY IGYWDOP ON THE PRE OR SUP OPERAND.
             IGYWDOP IS THE RMID FOR MOD IGYCDOPT THAT IS CURRENTLY INSTALLED.
GIM22601I    APPLY PROCESSING FAILED FOR SYSMOD UK95907.
```

- This USERMOD updates the COBOL compiler options.
- For more information on this USERMOD read IBM Support Doc.

USERMODs - Complicated Example – Part 1

- Sometimes you will need to modify multiple elements.
- When that happens, elements will likely be at different levels.
- Must group elements at same RMID level to same USERMOD.
- Following pages show USERMODs for IWSz (formerly TWS, OPC/A).
- Note elements at same RMID level grouped into same USERMOD.

USERMODs - Complicated Example – Part 2

- Multiple USERMODs embedded into single MCS source deck.
- This is a real-world example of local function added to IWS.
  - Modified IWS panels were simply "hacked" into ISPPLIB concatenation.
  - Applying IWS maintenance was a nightmare because of these panels.
  - I took manual updates and created these USERMODs to track changes.
  - Compare current and new panel source, merge changes, update USERMOD.

USERMODs - Complicated Example

```
//TOMPANEL DD DISP=SHR,DSN=TCONLEY.EQQ.SEQQPENU
//SMPPTFIN DD DATA,DLM=@@
++USERMOD(#IWS001) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4).
++PNLENU(EQQABJBP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQABJB6) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQABOPL) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQAJCLE) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQAMGP2) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQAMJB7) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQAMJB8) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
++PNLENU(EQQAUDIP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQFUADP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQMMJOP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQMMJO7) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQMMJO8) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
++PNLENU(EQQOPCAP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQSOPD1) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQURONA) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
++PNLENU(EQQUROQH) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
++PNLENU(EQQUROQL) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
++PNLENU(EQQXINIP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL) SYSLIB(SEQQPENU).
```

USERMODs - Complicated Example

```
++USERMOD(#IWS002) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4) PRE(UK57253).
++PNLENU(EQQSOPDP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQSOPD6) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++USERMOD(#IWS003) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4) PRE(UK59462).
++PNLENU(EQQABOSL) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++USERMOD(#IWS004) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4) PRE(UK61333).
++PNLENU(EQQACGPP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQACOPP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQAMGPP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++USERMOD(#IWS005) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4) PRE(UK69388).
++PNLENU(EQQMOPRL) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++PNLENU(EQQMOPRR) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
++USERMOD(#IWS006) REWORK(20143240).
++VER (Z038) FMID(JWSZ5E4) PRE(UK70775).
++PNLENU(EQQAMJBP) DISTLIB(AEQQPENU) TXLIB(TOMPANEL).
@@
```

Backing Up Your SMP/E Environment – Part 1

- Raise your hand if you've heard this myth:
  - "Once I ACCEPT, I can't go back if there's a problem."
    "Therefore, I will NEVER ACCEPT maintenance."

- Failing to ACCEPT maintenance is a very poor I/S practice!
  - Difficult-to-impossible to RESTORE PE or USERMOD without a recent ACCEPT
  - A RESTORE may regress *dozens/hundreds* of PTFs without a recent ACCEPT.

Backing Up Your SMP/E Environment – Part 2

- The key is to backup ***ALL*** SMP/E zones and support data sets, target, DLIB data sets, and OMVS filesystems.
  - Assumes a good naming convention for data sets!
- They can be DFDSS RESTOREd even AFTER an SMP/E ACCEPT operation.
- The following slide is a DFSMSdss job step to backup an entire SMP/E environment:

Backing Up Your SMP/E Environment

```
//S1       EXEC PGM=ADRDSSU
//SYSPRINT DD SYSOUT=*
//TAPE1    DD DSN=IBMUSER.BACKUP.RESVL1(+1),EXPDT=99000,
//            DISP=(,CATLG,DELETE),UNIT=CART,VOL=(,,,15),
//TAPE2    DD DSN=IBMUSER.BACKUP.RESVL2(+1),EXPDT=99000
//            DISP=(,CATLG,DELETE),UNIT=CART,VOL=(,,,15),
//TAPE3    DD DSN=IBMUSER.BACKUP.DLIBV1(+1),EXPDT=99000
//            DISP=(,CATLG,DELETE),UNIT=CART,VOL=(,,,15),
//TAPE4    DD DSN=IBMUSER.BACKUP.SMPVL1(+1),EXPDT=99000
//            DISP=(,CATLG,DELETE),UNIT=CART,VOL=(,,,15),
//TAPE5    DD DSN=IBMUSER.BACKUP.OMVS21(+1),EXPDT=99000
//            DISP=(,CATLG,DELETE),UNIT=CART,VOL=(,,,15),
//SYSIN DD *
    PARALLEL
    DUMP FULL INDYNAM(RESVL1) OUTDDNAME(TAPE1) OPT(4) -
         ALLEXCP ALLDATA(*) CONCURRENT
    DUMP FULL INDYNAM(RESVL2) OUTDDNAME(TAPE2) OPT(4) -
         ALLEXCP ALLDATA(*) CONCURRENT
    DUMP FULL INDYNAM(DLIBV1) OUTDDNAME(TAPE3) OPT(4) -
         ALLEXCP ALLDATA(*) CONCURRENT
    DUMP FULL INDYNAM(SMPVL1) OUTDDNAME(TAPE4) OPT(4) -
         ALLEXCP ALLDATA(*) CONCURRENT
    DUMP DATASET(  -
         INCLUDE(OMVS.RESVL%.**))     -
         OUTDDNAME(TAPE5) OPT(4) -
         ALLEXCP ALLDATA(*) CONCURRENT
/*
```

Finally…

Please complete a session evaluation.
Your comments help deliver better presentations.

I'm interested in hearing about your experiences with SMP/E; if you encounter any issues and would like assistance, send an email to pinncons@rochester.rr.com